



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,743	03/15/2002	Paul M. Hubel	10001028-1	4208

7590 05/02/2003
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

SEVER, ANDREW T

ART UNIT PAPER NUMBER

2851

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,743

Applicant(s)

HUBEL ET AL.

Examiner

Andrew T Sever

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-17, 20-26 and 29-42 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 18, 19, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 17 March 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on March 17, 2003 have been approved. **A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.**

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5-7, 29-31, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakanishi et al. (US 6,163,349.)

Nakanishi teaches a system in figure 2 for optical projection of a complete image that uses a light valve (3). The system comprises a lenticular array (4), which is composed of lenticules (shown in detail in figure 2a and the lenticules are part 4a) positioned onto the light valve (3). As shown in figure 4b, the lenticules are spherical in shape as is claimed by applicant's claim 6 and as shown in figure 5 said spherical lenticules produce largely square shaped pixels as is claimed by applicant's claim 7. Further a projection lens (6) is provided which has a filter (8) placed about it (Nakanishi

teaches in column 6 lines 61-62 that the color filter 8 is provided at the entrance pupil of the projection lens 6). Nakanishi teaches in figure 10 that the filter consists of first (blue 8b), second (red 8r), and third (green 8g) segments carrying signals of a first, second and third color component, where by inspection first and third segments are equal in area and the second segment is larger in area then the first and second area as is claimed by applicant's claims 5, 29, and 30. The filter (8) is aligned with the pixels of the lenticular array (column 8 lines 14-34 teaches that color information is per pixel is encoded by the filters and that the filters correspond in shape as is claimed by applicant's claims 5 and 32 and are aligned with the pixels for the lenticular array.). The filter and projection lens are arranged such that the filter separately outputs the color components for one of the pixels are combined and focused onto a location. Therefore each segment of the filters must filter a different color component of light received from the lenticular array as is claimed by applicant's claim 31.

With regards to applicant's claim 38 the existence of the apparatus of claims implies the existence of a method of projection that uses the apparatus taught by Nakanishi.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. (US 6,163,349) as applied to claims 1, 5-7, 29-31, and 38 above, and further in view of Cho et al. (US 6,547,398.)

As described in more detail above Nakanishi teaches a system and a method of projecting with it for optical projection of a complete image that uses a light valve. The system comprises a lenticular array comprising lenticules positioned onto the light valve and a projection lens for projecting images produced by the light valve. A filter is placed about the projection lens such that the filter is aligned with the pixels of the lenticular array. The shape of the filter depends on the shape of the lenticules of the lenticular array and the filter and the projection lens are arranged such that the color components are separately outputted by the filter for one of the pixels are combined and focused onto a location. The filter is composed of first, second, and third segments; with the first segment carrying signals of a first color component, the second segment carrying signals of a second color component, and the third segment carrying signals of a third color component and the first and third segments are equal in area and the second segment is larger in area than the first or third segments. Nakanishi teaches that the first filter segment carries a blue signal, the second a red signal and the third a green signal as is claimed by applicant's claim 4.

Nakanishi, however, does not teach that the lenticules are specifically cylindrical in shape rather Nakanishi teaches spherical lenticules, however spherical and cylindrical lenticules are well known equivalents, depending on the specific application. One

example of cylindrical lenticules is taught by Cho et al. (US 6,547,398) in figure 8A. As shown in figure 8b the use of these cylindrical lenticules causes the pixels to be rectangular in shape as is claimed by applicant's claim 3. This has advantages as taught in column 11 lines 54-65 that a full color image can be produced by each pixel, efficiency of the use of light is high, a high-resolution image can be achieved, and other benefits, especially in 3d projection. Since using cylindrical lenticules is one of the two well known shapes of lenticules and has many advantages it would have been obvious to one of ordinary skill in the art at the time the invention was made to use cylindrical lenticules in Nakanishi's system for optical projection instead of spherical.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. (US 6,163,349) as applied to claims 1, 5-7, 29-31, and 38 above.

As described in more detail above Nakanishi teaches a system and a method of projecting with it fro optical projection of a complete image that uses a light valve. The system comprises a lenticular array comprising lenticules positioned onto the light valve and projection lens for projecting images produced by the light valve. A filter is placed about the projection lens such that the filter is aligned with the pixels of the lenticular array. The shape of the filter depends on the shape of the lenticules of the lenticular array and the filter and the projection lens are arranged such that the color components are separately outputted by the filter for one of the pixels are combined and focused onto a location. The filter is composed of a first, second, and third segments; with the first segment carrying signals of a first color component, the second segment carrying signals

of a second color component, and the third segment carrying signals of a third color component and the first and third segments are equal in area and the second segment is larger in area than the first or third segments.

Nakanishi further teaches in figure 1 that the system includes a lamp (1), which acts as an initial source of light and a field lens placed between the light valve (3) and the filter (6). The field lens focuses the output of the light valve (3) and the lenticular array (4) onto the appropriate region of the filter (8). Nakanishi does not show in figure 1 a condenser placed between the lamp (1) and the light valve (3), however. This is well known in the art and is shown in the prior art figures 12 and 113 of Nakanishi.

Numerous other examples could be provided of providing condensers between the light source and the light valve, and therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have provided one in Nakanishi's system.

7. Claims 11, 16, 17, 20, 25, 26, 33-37, and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. (US 6,163,349) as applied to claims 1, 5-7, 29-31, and 38 above, and further in view of Lee et al. (5,629,743.)

As described in more detail above Nakanishi teaches a system and a method of projecting with it from optical projection of a complete image that uses a light valve. The system comprises a lenticular array comprising spherical lenticules (as is claimed by applicant's claims 16 and 25 which produces pixels that are square in shape as is claimed by applicant's claims 17 and 26) positioned onto the light valve as is claimed by

applicant's claims 35 and 37 and a projection lens for projecting images produced by the light valve. A filter composed of a plurality of segments as is claimed by applicant's claim 42 is placed about the projection lens such that the filter is aligned with the pixels of the lenticular array, so that the projection lens combines and focuses each of the color components for one pixel onto a location as is claimed by applicant's claim 41. The shape of the filter depends on the shape of the lenticules of the lenticular array as is claimed by applicant's claims 34 and 36, and the filter and the projection lens are arranged such that the color components are separately outputted by the filter for one of the pixels are combined and focused onto a location. The filter is composed of a first, second, and third segments; with the first segment carrying signals of a first color component, the second segment carrying signals of a second color component, and the third segment carrying signals of a third color component and the first and third segments are equal in area and the second segment is larger in area than the first or third segments.

Nakanishi, however, does not teach the system functioning to separate chrominance and luminance components of the complete image into separate images nor the use of first and second light valves. Lee et al. teaches in figure 8 an optical projection system, which uses two liquid crystal display panels (57 and 58) instead of the prior art single panel. The first panel display panel (58) process chrominance signals while the second (57) processes the luminance signal. Lee teaches in columns 1 and 2 that two panel projectors increase the brightness, contrast, and efficiency of the projected image, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second light valve in addition to the light valve with the

lenticular array so that one light valve can display the chrominance component and the other display the luminance component of the complete image separately in order to improve the image.

With regards to applicant's claim 39 the existence of the system taught by Nakanishi in view of Lee, implies a method of optical projection using it.

8. Claims 12-15 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi in view of Lee as applied to claims 11, 16, 17, 20, 25, 26, 33, 34, 36, 37, and 39-42 above, and further in view of Cho et al. (US 6,547,398.)

As described in more detail above Nakanishi in view of Lee teaches a system and a method of projecting with it for optical projection of a complete image that uses a light valve. The system comprises a lenticular array comprising lenticules positioned onto the light valve and projection lens for projecting images produced by the light valve. A filter is placed about the projection lens such that the filter is aligned with the pixels of the lenticular array. The shape of the filter depends on the shape of the lenticules of the lenticular array and the filter and the projection lens are arranged such that the color components are separately outputted by the filter for one of the pixels are combined and focused onto a location. The filter is composed of a first, second, and third segments; with the first segment carrying signals of a first color component, the second segment carrying signals of a second color component, and the third segment carrying signals of a third color component and the first and third segments are equal in area and the second segment is larger in area than the first or third segments as is claimed by applicant's

claims 15 and 24. Nakanishi in view of Lee teaches that the first filter segment carries a blue signal, the second a red signal and the third a green signal as is claimed by applicant's claims 14 and 23. Nakanishi in view of Lee further teach that the system functions to separate chrominance and luminance components of the complete image into separate images.

Nakanishi in view of Lee, however, does not teach that the lenticules are specifically cylindrical in shape rather Nakanishi in view of Lee teaches spherical lenticules, however spherical and cylindrical lenticules are well known equivalents, depending on the specific application. One example of cylindrical lenticules is taught by Cho et al. (US 6,547,398) in figure 8A. As shown in figure 8b the use of these cylindrical lenticules causes the pixels to be rectangular in shape as is claimed by applicant's claims 13 and 22. This has advantageous as taught in column 11 lines 54-65 that a full color image can be produced by each pixel, efficiency of the use of light is high, a high-resolution image can be achieved, and other benefits, especially in 3d projection. Since using cylindrical lenticules is one of the two well known shapes of lenticules and has many advantages it would have been obvious to one of ordinary skill in the art at the time the invention was made to use cylindrical lenticules in Nakanishi in view of Lee's system for optical projection instead of spherical.

Double Patenting

9. Applicant is advised that should claim 34 be found allowable, claim 36 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an

application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

10. Applicant is advised that should claim 35 be found allowable, claim 37 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claim 5 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 6 of U.S. Patent No. 6,464,359 in view of Kingslake as provided by the applicant.

Owen '4,359 claims a system for optical projection of a complete image, using a light valve, a lenticular array composed of lenticules positioned onto the light valve, and a filter placed about a projection lens. Owen claims that the filter is aligned with the pixels of the lenticular array the filter depends upon the shape of the lenticules in the lenticular array.

Owen does not claim that the first and third segments are equal in area and where the second segment is larger in area than the first or third segment. Figure 3 (a) of Kingslake teaches that the original Kodacolor arrangement of the filter bands at the lens aperture (projection lens) is designed such that the middle band is larger than the first and third bands. Although Kingslake shows green as the second segment instead of third segment as is claimed by the present applicant, since Owen teaches that the colors in Owen's filters electronically alternate in a different phases, the second segment would be red and the third segment would be green as is claimed by applicant. Since the Kodacolor arrangement is the older and classical design for arranging the colors filters, it would have been obvious to one of ordinary skill in the art to arrange the filters of Owen in the manner taught by Kingslake which includes the second segment being larger in area while the first and third have equal areas

13. Claim 10 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 6 of U.S. Patent No. 6,464,359 in view of Takahashi et al. (US 6,398,365.)

Owen '4,359 claims a system for optical projection of a complete image, using a light valve, a lenticular array composed of lenticules positioned onto the light valve, and a filter

Art Unit: 2851

placed about a projection lens. Owen claims that the filter is aligned with the pixels of the lenticular array the filter depends upon the shape of the lenticules in the lenticular array.

Owen does not specifically claim a field lens being placed between the light valve and the filter or a lamp, or a condenser placed between the lamp and the light valve. All three are well known, however, in optical projection systems having lenticular arrays such as taught by Takahashi et al. (US 6,398,365) in figure 1, where field lens (which is a condenser lens 54) is taught in column 2 lines 31-34 to condense the light from the liquid-crystal display for projection via the projection lens. Further a light source is taught (4) and a condenser (5a). Since the field lens is needed to condense the light and is most likely present in the apparatus taught by Owen it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a condenser lens as a field lens placed between the light valve and the filter.

14. Claims 11 and 20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 6 of U.S. Patent No. 6,464,359 in view of Lee et al. (US 5,629,743.)

Owen '4,359 claims a system for optical projection of a complete image, using a light valve, a lenticular array composed of lenticules positioned onto the light valve, and a filter placed about a projection lens. Owen claims that the filter is aligned with the pixels of the lenticular array the filter depends upon the shape of the lenticules in the lenticular array.

Owen et al. however does not teach that system functions to separate chrominance and luminance components of the complete image into separate images nor the use of first and second light valves. Lee et al. teaches in figure 8 an optical projection system, which uses two

Art Unit: 2851

liquid crystal display panels (57 and 58) instead of the prior art single panel. The first panel display panel (58) process chrominance signals while the second (57) processes the luminance signal. Lee teaches in columns 1 and 2 that two panel projectors increase the brightness, contrast, and efficiency of the projected image, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second light valve in addition to the light valve with the lenticular array built onto it (as is claimed by applicant's claim 20); so that one light valve can display the chrominance component and the other display the luminance component of the complete image separately in order to improve the image.

15. Claims 15 and 24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 6 of U.S. Patent No. 6,464,359 in view of Lee as applied to claims 11 and 20 above and further in view of Kingslake as provided by the applicant.

As described in more detail above, Owen in view of Lee teaches a system for optical projection of a complete image, using two light valves (one for imaging the light with a chrominance signal and the second for imaging the light with a luminance signal), a lenticular array composed of lenticules positioned onto the first light valve, and a filter placed about a projection lens. Owen in view of Lee teaches that the filter is aligned with the pixels of the lenticular array and inherently the filter depends upon the shape of the lenticules in the lenticular array since any change in the shape of the lenticular array as acknowledged by the applicant would change the number of pixels in a group of the image as well as the general shape of the pixels themselves.

Owen in view of Lee does not necessarily teach an embodiment wherein the first and third segment are equal in area and where the second segment is larger in area than the first or third segment. Figure 3 (a) of Kingslake teaches that the original Kodacolor arrangement of the filter bands at the lens aperture (projection lens) is designed such that the middle band is larger than the first and third bands. Although Kingslake shows green as the second segment instead of third segment as is claimed by the present applicant, since Owen teaches that the colors in Owen's filters electronically alternate in a different phase the second segment would be red and the third segment would be green as is claimed by applicant. Since the Kodacolor arrangement is the older and classical design for arranging the colors filters, it would have been obvious to one of ordinary skill in the art to arrange the filters of Owen in view of Lee in the manner taught by Kingslake which includes the second segment being larger in area while the first and third have equal areas.

Allowable Subject Matter

16. Claims 8, 9, 18, 19, 27, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter:
Claims 8 and 9, claim that a fourth segment is present on the filter for carrying a fourth signal either of one of red, green, or blue as is claimed by applicant's claim 8, 18, and 27 or of white as is claimed by applicant's claim 9, 19, and 28. The prior art of record,

specifically Nakanishi et al. only teaches using three segments. Only Owen et al. suggests the use of four segments, however Owen as explained in applicant's arguments Owen does not teach that the color components separately output by the filter for one of the pixels are combined and focused onto a location as claimed in amended claim 1 of which claims 8, 9 are indirectly dependent on and Owen's does not claim the shape of the lenticules to be of either cylindrical or spherical shape as is claimed by claims 16 and 25 of which claims 18, 19, 27, and 28 are dependent on. Therefore claims 8, 9, 18, 19, 27, and 28 would be allowable if written in independent for including the matter of their rejected base claims.

Response to Arguments

18. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 703-305-4036. The examiner can normally be reached M-F 8:30-5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell Adams can be reached at 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Application/Control Number: 10/099,743
Art Unit: 2851

Page 16

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

AS
April 29, 2003


RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800